Military Sources of Training-Related Information

Educational Testing Service

Prepared For
Advanced Research Projects Agency

September 1975

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MILITARY SOURCES OF TRAINING-RELATED INFORMATION

by

Loraine T. Sinnott

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EDUCATIONAL TESTING SERVICE

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of this project was to locate and describe existing information resources within the military community useful in the development of training courses and programs. Resources considered included abstracting services, computer files, catalogs, directories, and management information systems. Resources described are discussed and evaluated in the context of the feasibility of resource sharing between the services and the present extent of such sharing. The project itself is part of a broader project to develop a system refinement and assess the feasibility of an information system supporting military training
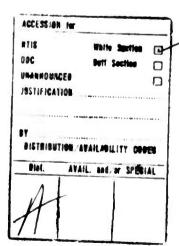
activities (TRAIDEX).

CONTENTS

INTRODUCTION

The study reported in this document is part of a feasibility
assessment and system refinement for the Training Resource Applications
Information/Data Exchange (TRAIDEX). The study had its origins in an
initiative of the Interservice Training Review Board (ITRB), which
was organized in 1972 to explore ways of improving the cost-effectiveness
of military training through cooperative efforts among the armed services.
TRAIDEX was conceived of as an information collection, storage, and
dissemination service that would facilitate the interchange of new
training techniques and training material resources among the service
agencies. Its emphasis is on training materials development, application,
effectiveness, and availability.

In 1974 the ITRB requested support from the Advanced Research Projects
Agency (ARPA) on a matching funds basis with the three major services for
a feasibility study and refinement of the TRAIDEX system concept. Part
of this refinement is a determination of the existing sources of information
that might be included in, or accessed through, TRAIDEX. It was felt that
a number of useful information resources already exist, both within and
outside of the military, and that these resources should be assessed
against the TRAIDEX users' needs. Educational Testing Service was assigned
the responsibility of providing this assessment.

The identification and assessment of relevant information resources
was conducted in two parts: those developed and operated outside the
military community, and those of the various agencies of the Department
of Defense. The former were reported in Information Resources for
Training: A Survey of Non-Military Sources, by Len Swanson and Loraine T.
Sinnott (Educational Testing Service and Interuniversity Communications
Council, Inc., Technical Report No. 1, March 1975). The purpose of this
document is to describe military information resources and suggest ways
in which these resources might be related to TRAIDEX

This report was completed in September, 1975, during the early phase
of the study of the TRAIDEX concept being conducted by SofTech, Inc. (ARPA
Order No. MDA 903 75 C 0224). This document and the survey of non-military
information sources are inputs to the SofTech study that will specify the
information content of TRAIDEX and its concepts of operation. The final
report of the SofTech study, which is scheduled to be completed in March,
1976, should be consulted for details of the proposed form and information
content of the initial TRAIDEX system.

1.

DESCRIPTION OF THE STUDY

The study considered a variety of different types of information resources. Our working definition of "information resource" was: any systematically organized collection of information, whether computerized or not, from which a TRAIDEX user might obtain either answers to specific questions about training resources or citations to sources of information about training resources. The format of an information resource can be a computer tape or file, a book, a catalog, a directory, or simply a list, such as a bibliography. It can also be an information product of an agency, or an information service.

"Training" is distinguished from education generally by being a subset in which instruction has well-defined performance objectives, or is directed toward specific competencies. While the emphasis of TRAIDEX is on technical training, other types of training were not excluded.

The determination of whether or not an information resource relating to training should be included in this report was based on its potential value in the development of a training course or program. For this purpose, the following breakdown of the instructional development process was used:

1. Instructional management and planning, including identification of instructional needs, development of priorities, organization of personnel, etc.

2. Analysis of instructional problem, including review of discipline and existing courses, identification of student entry conditions, etc.

3. Design of instructional program, including task analysis, development of instructional objectives, and selection of instructional strategies.

4. Development of instructional program, including selection of equipment and media.

5. Evaluation of instructional program.

Items specifically excluded from the study were: information resources developed or operated outside the military, resources which are duplicated by more comprehensive ones, and resources which provide too little information to be of practical use in the instructional development process. A number of such resources were located and are referred to in the conclusions section of this report; indeed, a large number of resources marginally related to TRAIDEX exist. However, full descriptions and assessments are provided only for those selected resources which seemed to have direct and useful relevance to the TRAIDEX concept.

Methodology

A variety of sources were used to identify and obtain information about potential catalog entries. Among them were library reference materials, computer search services (such as ERIC and NTIS), books and periodicals on training, and people. The basic approach was to isolate the information categories relevant to tasks in the instructional development process and then attempt to locate materials which would be useful to a person engaged in the tasks. Thus, we spoke with a number of people who have responsibility for one or more aspects of the instructional development process in order to find out what information resources they used or knew about. We also talked with people who have a broad knowledge of the fields of education, training, or information systems.

The Defense Documentation Center was heavily queried in order to survey for potential services and locate information about specific sources. Where appropriate we also contacted the responsible agency to get further information.

CONCLUSIONS

General Conclusions

When investigating the feasibility of sharing training resources across services it is important to first consider the present sharing of such resources within each service. That sharing is, in general, not presently supported by vehicles that allow efficient dissemination of information about available materials. Within each service, training sites are dispersed all over the world. Typically a site specializes in fulfilling specific training requirements, requirements usually distinct from those of another site. But although site requirements may differ, there sometimes is overlap in the training objectives of sites. Few mechanisms exist which effectively point to the materials that might be shared in support of these common objectives.

Typically, what inter-site sharing does occur depends on personal interactions of developers and instructors, resulting in the 'pointing out' of available resources. This system of personal contacts could perhaps evolve into an efficient information exchange. But the community of training personnel is not stable; it is not spared the constant turnover and relocation of manpower which characterizes the services.

In the area of instructional media this situation will be changed with the implementation of an automated information system presently being developed by the Directorate of Audio-Visual Activities (DAVA) in the Office of Information for the Armed Forces. This project promises to provide a mechanism which will allow a course developer or instructor to quickly and comprehensively search both his own service inventory and those of the other services for those media components of potential relevance to his course objectives.

There presently is service-wide support of objective-based course development. The continued support of objective-based training within each service will strengthen the feasibility of intra- and inter- service resource sharing. As course materials continue to be indexed by the objectives they support, the pool of those materials that can be recognized by other instructional developers as potentially useful will grow. The support of objective-based training has been paralleled by the development of completely mediated, self-paced modules. Their continued development will provide a foundation for intra- and inter- service sharing of course units.

All the services are presently using computers to support the training of their personnel. The extensiveness of this use has been pointed out in recent reviews of service-wide activity (Gene T. Sherron, Computers in Military Training. Industrial College of the Armed Forces, June, 1975; J. D. Fletcher, Computer Applications in Education and Training: Status and Trends. Navy Personnel Research and Development Center, NPRDC 75-32, April, 1975). These reports also indicate the broad range of hardware configurations which have been implemented to support computer-based instruction. The only extensive effort to examine the practicability of cross-service development has been the ARPA supported evaluation of the University of Illinois' PLATO. Intersite sharing of computer-based materials will be impeded by the variety of hardware configurations being used.

The remainder of this section provides an overview of military information activities in the areas of management information, the Instructional Systems Development process, job-task analysis, instructional research, course identification, and instructional media. The Appendix details those activities which are considered most relevant to TRAIDEX.

Management Systems for Training

The management of military training must contend with a variety of complex variables, such as the location of and demand for training resources in a dispersed training community, changing manpower requirements, a changing instructional technology, increasing technical requirements, increasing training costs, and a changing and heterogeneous student population. To aid management personnel in assessing conditions and projecting outcomes based on assumed conditions, a number of management information systems and computer models have been and are continuing to be implemented within each service.

There has been little coordination, either within or between the services, of these development efforts. In a recent extensive survey of existing computer models in the area of manpower and personnel planning, Hutchins et al. (Computer Models for Manpower and Personnel Management: State of Current Technology. Elmer S. Hutchins, Jr., et al. Naval Personnel Research and Development Laboratory, April 1973) found that in several areas (e.g. inventory aging) numerous models which solve similar if not identical problems have been independently developed, either in-house or on a contract basis, at different sites.

An exception to this developmental trend has been the computerized occupational data analysis programs. These programs cluster personnel according to the degree of similarity of the jobs they perform; the clustering aids in determining the adequacy of military rate structures nd their associated training plans. The Air Force created and implemented the first occupational programs; these Air Force programs have since been converted for use by the Marine Corps, Navy, Coast Guard, and Army.

Contributing to the problem of developmental coordination is the lack of availability of comprehensive indexes which provide well-documented, evaluative descriptions of what exists. In surveying the area of attitudinal research data, Ramsey-Klee et al. (Diane M. Ramsey-Klee, Vivian Richman, and G. O. Wiederhold, Feasibility of and Design Parameters for a Computer-Based Attitudinal Research Information System. NPRDC TR 76-9, August 1975) identified 60 data bases

maintained at NPRDC. They also found that NPRDC researchers did not have any systematic way of knowing what the Center's data base holdings were. Typically researchers were only aware of their own data bases and those of others they may have incidentally learned about.

The primary audience for all existing computer models and the majority of existing management information systems is at a management level far removed from the instructor. Yet, those related to training may be of potential value to TRAIDEX in that some do harbor data bases that may be considered viable sources of training data (e.g. training resource inventories and training materials evaluations as inferred through student achievement levels).

Management systems of interest to TRAIDEX users at the instructor level are those concerned with the management of instruction. Such systems typically support the use of objective-based materials, materials that could be easily validated and shared throughout the services. Computer managed instruction has been implemented at a number of military sites, with major systems in Memphis, Tennessee (Navy), Ft. Gordon, Georgia (Army), and Denver, Colorado (Air Force). An example of one such system is the Automated Training Management System (ATMS).

The Automated Training Management System* is a computerized record keeping and report generation facility that is designed to help the instructor and course supervisor maintain data on individual and class performance, course description material (POI), test effectiveness, and so on. It was developed by the IBM Federal Systems Division and is currently used by the Department of Intelligence Training at the Air Force's Lowry Technical Training Center to assist in the management of several courses. The system provides a variety of file maintenance and reporting functions, including the automatic production of tests, grading results, and student performance reporting. It also allows the course supervisor to maintain an updated copy of course description material and to produce copies on demand.

While ATMS does ease the record-keeping chores of the instructional branch, it suffers from some serious drawbacks. It requires the user to master a fairly complex and rigid set of transactions, and the entry of massive amounts of new course or student information can be quite time consuming. It is not a true CMI system, since it does not offer prescriptive guidance to the individual student. Finally and most critically, it is a batch oriented system and it is ill adapted to high volume self-paced courses in which individual students will require testing and grading on a given criterion objective at random.

The prognosis for this particular system is poor, since it requires fairly extensive computer facilities and yet is well behind the state of the art in CMI. In addition, it is in direct competition with the Advanced Instructional System (AIS) currently being developed at Lowry. Current plans call for ATMS to be phased out when the courses it currently maintains are due for substantial revision.

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*The following information on ATMS was supplied by Carl Young of SofTech, Inc.

Instructional Systems Development Within the Military

The systems approach to training refers to a formal set of procedures for developing or redeveloping training programs. A variety of different models have been disseminated specifying the steps taken in a systems approach to training. Nevertheless, a commonality exists among them in that they all follow the same basic sequence of activities.

Typically, the developer begins the systems approach by analyzing the job for which training is being developed or redeveloped. Training requirements are derived from this data, followed by the development of criterion objectives satisfying the requirements. Criterion tests are then written for the objectives. Instructional strategies are chosen based on the characteristics of the objectives to which they relate. Materials appropriate to the strategies are selected or produced, and then validated on samples of the student population. Finally, the completed program is evaluated. Feedback from all steps, providing data to base modification decisions, is an essential characteristic of the system approach.

Because of the basic commonality of activities existing between models, it is possible to design a training development support system like TRAIDEX which aids any one of the models chosen for use. The concept of a systems approach to training transcends the specifics of terminology and development tasks associated with any one model. It appears feasible that TRAIDEX can make use of this.

Below is a list of the major service manuals guiding the developer of technical training programs through the systems development process.

Instructional Systems Development Model. Robert K. Branson et. al., Center for Educational Technology, Florida State University (FSU), 25 October, 1974 (preliminary version).

Army
TRADOC Reg 350-100-1, Training. Systems Engineering of Training (Course Design), 20 April, 1972.

Air Force
AFM 50-2. Instructional System Development, 31 December, 1970.
AFP 50-58 Volumes I-V. Handbook for Designers of Instructional Systems, 15 July, 1973.

Navy
CNTT-AID. Procedures for the Planning, Design, Development, and Management of Navy Technical Training Courses, September, 1974.

Instructional Systems Development and TRAIDEX

In the process of TRAIDEX definition, several tasks in the course development process were identified as those which would be aided most by the availability of appropriate information. These tasks include:

> Job Analysis
> Analysis of Existing Courses, and
> Review of Existing Materials

In this section, sources of training-related information of relevance to these tasks are identified. In addition, activities indexing documents supporting course development, such as guides to preparing training tasks or research identifying optimal learning strategies, are cited. The stress is on those sources which are thought to be of relevance to the design of TRAIDEX. The appendix provides more descriptive information on several of the cited sources.

Sources of Information About the Job Environment

The first step in a systems approach to training program development is an analysis of the job for which training is to be designed. Typically, an adequate analysis is based on the processing of data collected through field surveys of the occupational area under investigation. The procedures involved require personnel trained in such things as data collection methods, preparation of data collection forms, sampling, data validation, and data analysis. Because these procedures can be more efficiently and effectively completed by personnel trained in job analysis, each of the services has established operational units which collect, analyze, and disseminate job analysis data.

The Air Force has excelled in the development of occupational survey technology (see Appendix: Comprehensive Occupational Data Analysis Programs). With slight modifications, both the Marine Corps and the Navy (the Navy system is associated with the designation NOTAP: Navy Occupational Task Analysis Program) have adopted the Air Force approach. The Army system (associated with the designation MODB: Military Occupational Data Bank) is presently being revised to follow more closely the Air Force approach.

Through the publication of Occupational Survey Reports, the occupational survey units provide the curriculum developer with information regarding job characteristics. The reports contain extensive data about an occupational area, including a task breakdown of all job types within the area. The breakdown furnishes such things as the percent of personnel performing a task and the percent of personnel time spent on each task performed.

The Reports provide the developer with data needed to design training programs which efficiently prepare personnel for their military jobs. With the growing importance of job-related training to the military train..ng community (see, for example, Chief of Naval Training, CNTINST 1540.1, Code 0172, Pensacola, Fla., 26 May, 1972, or Instructional Technology Symposium, U.S. Army Transportation School, 19 May, 1975), such data has become a critical element in the engineering of training programs.

Sources of Information about Documents Supporting Course Development

Two activities of the Defense Department provide excellent sources of information about such documents. One is the Defense Documentation Center; the other is the Instructional Technology File (see Appendix).

Among its other activities, the Defense Documentation Center (DDC) is the central depository for all Defense sponsored research, development, test, and evaluation literature, generated in-house or by contract. As such, all training-related literature supported by the Defense Department is catalogued by and disseminated through the DDC.

Periodically many Defense agencies supporting research activities issue bibliographies of the documents that have been generated by their activities. The DDC also collects these bibliographies. Hence, in its files are bibliographies from organizations supporting training-related research, such as the Air Force Human Resources Laboratory, the Army Research Institute, the Naval Training Equipment Center, and the Navy Personnel Research and Development Center.

The Instructional Technology File is a computerized file containing abstracts of training-related literature. It is presently being implemented on the Mead Data Central Information System maintained at INFOCEN, Wright-Patterson Air Force Base (see Appendix). One of the user groups to which the file is addressed is the curriculum developer; hence, much of the literature cited directly supports the curriculum development process. Since many relevant documents are cited by both the DDC and the Instructional Technology files, the training development process can be aided by the use of these indexing efforts.

The Instructional Technology file is heavily loaded with citations supporting the development process. Because of this, the course developer's task in retrieving relevant documents is relatively straightforward. Relevant literature in the DDC file, on the other hand, is more difficult to retrieve. The majority of the DDC file contains non-training related literature; furthermore, the training related literature indexed by the DDC contains many documents far removed from the training development process.

Sources of Information about Existing Courses

Each service maintains catalogs of their formal and correspondence training courses. The formal school catalogs are cited below:

U.S. Air Force Formal Schools Catalog (AFM 50-5)
U.S. Army Formal Schools Catalog (DA PAM 350-10)
Marine Corps Formal Schools Catalog (MCO-P1500.12)
Catalog of Navy Training Courses (NAVEDTRA 10500)

The Navy's Catalog (CANTRAC) is presently available on-line through INFOCEN (see Appendix). Use is limited, though, to personnel involved in hard-copy production of the catalog.

The review of service catalogs to locate existing courses relevant to those proposed for development or modification is encouraged by an interservice regulation passed to facilitate interservice sharing of courseware (Memorandum of Agreement Between The Commander, U.S. Army Training and Doctrine Command, Chief of Naval Education and Training, Commandant of the Marine Corps, and the Commander, Air Training Command, 1 April, 1974). But the catalogs do not provide adequate retrieval mechanisms for this activity. Generally, they are cumbersome to use. Furthermore the information provided with citations is too brief to allow

critical screening. Typically, potentially relevant materials are retrieved
only from those cited courses which closely match the course with which the
developer is concerned. Hence, although course materials of relevance to
the developer may exist under another course title, generally these materials
are not located. Existing materials of relevance to a proposed course must
be indexed by more sensitive criteria than course titles if efficient sharing
of course materials is to exist.

Sources of Information About Instructional Media

Although computerized inventories of instructional media (e.g.,
motion pictures, videotapes, training devices) are maintained by a
number of military activities, course developers typically retrieve
information about existing materials through hard-copy publications and
personal referrals. Computerized data banks are maintained for inventory
management and are generally available only to personnel concerned with
this management.

The Aerospace Audio-Visual Service at Norton AFB in California
supports one of the most sophisticated of these automated inventory
systems. Besides providing a comprehensive, machine searchable inventory
of all AF films obtainable through AF libraries, the system performs many
of the clerical tasks of motion picture distribution. If queried it
specifies the availability of a film, the film's bin location within
the Norton depository, or the film's location if on loan; it schedules
motion picture loans, prints all necessary invoice and shipping paperwork,
and prints bin retrieval and shipping instructions. The system also
supports hardcopy production of Air Force Manual 95-2, the catalog of
Service-wide Air Force films.

Hard copy catalogs indexing instructional media available to course
developers are published for various categories of media. Catalogs of
programmed instructional material are compiled by the Army, Navy, and
Air Force. Catalogs indexing Service-wide films are also published
within each service, as are catalogs of training manuals. Catalogs of
videotapes have been prepared by the Army and Air Force. The publication
of catalogs of training devices has been hampered by the difficulty of
defining the category. Recently though the Simulative Training Systems
Directorate of the Army Training Support Activity* has compiled such a catalog.

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*Formerly called the Training Aids Management Agency (TAMA).

Nevertheless, present methods of disseminating information regarding available instructional media are in a state of flux. One reason for this is the rising importance of non-traditional categories of media to the training community (e.g., CAI materials, videotapes, simulation devices). More fundamental, though, to these changes are the inter-service coordination and consolidation efforts of the Directorate of Audio-Visual Activities (DAVA) in the Office of Information for the Armed Forces.

The Directorate was formed on the recommendation of a DOD Task Force commissioned to study the management of audio-visual activities within the military. Their findings were published in August, 1974, as the Audio-Visual Management Task Force Report to the Assistant Secretary of Defense, Manpower and Reserve Affairs.

As one of their activities, the Task Force surveyed media cataloging activities within the military. The following general conclusions were noted in the Task Force Report:

- Because of the length of time in their preparation, catalogs are out-of-date by the time of their publication.

- Catalogs generally do not report resources under development.

- Information provided with resources is not adequate. In particular:

    - Synopses are too brief to give a clear indication of intent or presentation technique.

    - Learning objectives are either not listed or not clearly specified.

    - Target audiences are not clearly defined.

    - No evaluation data about the resource is provided.

The formation of the Directorate was proposed to provide policy guidance and management control for audio-visual activities throughout the Department of Defense. As part of this mission, the Directorate is presently administering the development of a computerized central inventory of A-V software and hardware.

The inventory is expected to support the printing of consolidated, inter-service catalogs of instructional media resources, indexed by topical area. Publications stemming from the DAVA inventory should preclude

the need for present publication activities within each service and provide for the publication of catalogs presently not available. Computerized files will be maintained for a variety of media categories, including motion pictures, videotapes, filmstrips, video discs, slide sets, audio tapes, multi-media packages, overhead transparencies, CAI software, and training devices. Resources scheduled for production will also be indexed in the DAVA inventory.

It is anticipated that the inventory will eventually be available to all A-V activities for on-line retrieval of information regarding existing resources. Presently it is being implemented on INFOCEN (see attached description), a facility which does provide the required communication links for this distribution. Terminal installation to connect service schools and regional A-V information centers is scheduled for FY 76 and FY 77.

The DOD A-V inventory publications promise to provide the course developer with an efficient vehicle to comprehensively explore training materials existing throughout the military. Detailed information will be provided with each entry and should allow the user to critically screen citations (see Department of Defense Audio-Visual Production Report Form DD 1995 for information segments required with inventory citations). When on-line capabilities are available to the developer, his search and retrieval of required materials will be facilitated even more. Presently, military dissemination activities are fragmented both within and between the Services; the DAVA effort promises to remedy this situation.

Since DAVA will comprehensively organize such a major area of training-related information within the military, it is clear that TRAIDEX will not need to cover this area.

SUMMARY AND RECOMMENDATIONS

The relationship between TRAIDEX and each of the information
resources cited in this report will be a continuing issue throughout
the development and evolution of the system. Initial relationships,
or alternative relationships, are suggested in this report; these
need to be reviewed and tested during system definition, and reconsidered
as successive generations of TRAIDEX evolve. TRAIDEX should be
flexible enough to permit such reconsideration. One concern will be
the extent to which TRAIDEX will provide for coordination of the many
information activities of the military. The need for such coordination
will clearly grow.

The impact of TRAIDEX on job-task analysis is not likely to be
great. It will not supplant or augment the occupational survey activities
currently being undertaken in each of the services. However, TRAIDEX
might provide a set of pointers to the products of these surveys. In
conjunction with information on course modules and materials, this
would give the developer a useful tool for identifying any previous
work related to his subject area or job tasks.

The organization of information about audio-visual materials is
well defined by the DAVA effort. The relationship between TRAIDEX and
DAVA is not yet clear. Two obvious alternatives are to subsume TRAIDEX
under DAVA, or to subsume DAVA under TRAIDEX. In any case the
definition of TRAIDEX must proceed with full awareness of potential tie-ins
to DAVA so that redundant mechanisms are not developed.

ACKNOWLEDGEMENTS

APPENDIX

DESCRIPTIONS OF INFORMATION RESOURCES

COMPREHENSIVE OCCUPATIONAL DATA ANALYSIS PROGRAM (CODAP)

DESCRIPTION: CODAP is an integrated system of computer programs with
the primary function of clustering personnel according to the degree
of similarity of the jobs they perform. A battery of auxiliary programs
in CODAP provide various sortings, rankings, and statistical analyses
of user selected personnel subgroups. Data submitted to CODAP analysis
is obtained through job inventories administered to personnel in the
occupational field under investigation.
  The Occupational Research Division of the Air Force Human Resources
Laboratory, Air Systems Command, developed the technology of the
occupational survey. The Occupational Measurement Center, Air Training
Command, is charged with administrating survey activities, including
inventory booklet development, dissemination, and retrieval, analysis
of CODAP printouts, and preparation and distribution of the final
Occupational Survey Reports. The Occupational Research Division
maintains the CODAP programs on an Univac 1108 and is responsible for CODAP
processing of the booklet data.

JOBS CHOSEN FOR ANALYSIS: Each year, the Deputy Chief of Staff of Personnel
and the Center select between 40 and 60 Air Force Specialty Code for
analysis. An attempt is made to sequence the specialties chosen so that
all specialties are analyzed at least once every three years.
  The Air Force has curtailed any agency outside of the Occupational
Measurement Center from performing occupational surveys. The CODAP
program has been in effect long enough to have data available on all
specialties; furthermore the three-year recycling effort makes the
validity of the most recent survey data for a specialty highly probable.
Problems with untimely data are also avoided by an attempt to schedule
course revisions with the release of new survey results.

USERS OF OCCUPATIONAL SURVEY REPORTS: Occupational survey technology was
originally designed to assist Air Force personnel managers; research
and development addressed to the needs of this population continues (The
United States Air Force Occupational Research Project. R. E. Christal,
AFHRL Occupational Research Division, Lackland AFB, January 1974,
EO 094 187). Because job analysis has become such a key element in
training system design, curriculum developers have since become viable
users of survey data. Their entrance into the user population has been
met by literature discussing the types of output data available and its
relation to course development (see, for example, Interpretation and
Training Uses of Computer Printout Data of NOTAP. J. H. Swann, Naval
Personnel Research and Development Lab, June 1973, AD-763 353) and
research exploring products derived from surveys that would aid development
efforts (e.g., Research project: Methods for Analysis and Use of Job
Task Data in Instructional System Development. Principal Investigator:
Lt. Col. Donald F. Mead, AFHRL Occupational Research Division, Lackland
AFB cited in Work Unit Summaries, Defense Documentation Center, Ac. No.
DF 232080, July, 1975).

THE CODAP-CURRICULUM DEVELOPER INTERFACE: Printouts from the CODAP programs are analyzed by the Occupational Measurement Center. The analysis is released as an Occupational Survey Report. Reports may be obtained through the 3700th Occupational Measurement Squadron, Lackland AFB.

An index to existing Reports is provided in the Program Technical Training publication (PTT 76-4, 1 April 1975). Entry information given with a report includes the AFSC title, the date the survey was administered, information about future updates, and the training center assigned prime training responsibility for the career field ladder. The index also lists AFSCs scheduled for survey for the first time and expected dates of Report completion.

The Report provides a variety of analyses of the AFSC. Typically, information of interest to the developer includes such things as the set of tasks performed by a particular subgroup, the percent of personnel in the subgroup performing each task, the relative time they spend on each task, and the types of equipment used in task performance. If information of interest is not contained in the Report, additional information from the Center may be requested.

Although data contained in the Occupational Survey Report is of value to the developer, the Report itself is addressed to the personnel manager. Because of this the developer must wade through a tremendous amount of data before retrieving information of specific interest. An effort is presently underway to provide developers with survey documentation tailored to their specific needs; the result will be a survey format addressed to the developer. In particular the Occupational Research Division has recently developed a method to predict from survey data those tasks performed by a subgroup in an AFSC which should be included in the training curriculum. In other words, survey analysis can now go beyond identifying those tasks performed to further identify those tasks which should be included in training. Variables considered in this prediction are:

(1) the % of personnel performing the task,
(2) the task difficulty,
(3) the task delay tolerance (i.e., the necessity to perform the task immediately upon demand), and
(4) the consequences of inadequate performance.

Data pertaining to these variables is presently being collected with field surveys. In the future when occupational surveys are completed, Reports addressed to curriculum specialists will be published which include:

(1) the break down of those tasks performed by an AFSC subgroup,
(2) data about each task pertaining to each of the above variables, and
(3) the predicted rank-ordering of the tasks as they should be included in the curriculum.

These advances in occupational survey technology were reported at the September 15, 1975 Military Testing Association Convention (Determining Training Priorities for Job Tasks. D. F. Mead, Occupational and Manpower Research Division, AFHRL; Task Factor Benchmark Scales for Use in Determing Training Priorities. K. Goody and W. J. Watson, Occupational and Manpower Research Division, AFHRL).

DEFENSE DOCUMENTATION CENTER (DDC)

LOCATION: Cameron Station
Alexandria, Virginia

DESCRIPTION: The Defense Documentation Center, a field activity of the
Defense Supply Agency, is the central depository for the Defense
Department's collections of research and development documents in
virtually all fields of science and technology. Defense Department
and associated contractor researchers are required to deposit information
(both unclassified and classified) into various data banks maintained
by the DDC. The DDC in turn disseminates information derived from these
banks to eligible users.
    The DDC can provide answers to three bas_ questions about a subject
area:
    (1) What research is being planned?
    (2) What research is currently being performed?
    (3) What results were realized by completed research?
Typically, the curriculum developer will be interested in answers to the
later question. The curriculum developer requires information to aid in
the on-going development of a course. He usually cannot wait for
results to be generated from an activity that is being planned or is in
progress. Hence, answering questions about completed research is the
DDC service of most relevance to the curriculum developer. The Technical
Report Program is the major DDC activity which provides information
about completed research.
    The Technical Report Program will be emphasized in the remaining
parts of this synopsis. The DDC provides numerous other services, both
associated with the Technical Report Data Bank and also with the other
Data Banks maintained by the DDC. Information about these other services
is available in the DDC publication: User's Guide to Defense Documentation
Center Programs, Products, and Services. User restrictions are placed
on some of these services; these restrictions are noted in the User's
Guide.

ENTRY INFORMATION: The DDC announces the existence and availability of
accessioned documents through its own announcement publication and
through announcement media of the Department of Commerce. Classified
reports and unclassified reports having distribution limitations
are announced in the confidential DDC Technical Abstract Bulletin (TAB).
Announcements of unclassified reports having no distribution limitations
are listed with similar reports produced by other Federal agencies in
the Government Reports Announcement (GRA) published by the Department
of Commerce, NTIS.
    For announcement, technical reports are categorized in a two-level
arrangement consisting of 22 major subject fields, with a further
subdivision of fields into some 200 subject groups.

Entry citations include the standard bibliographic information and a document abstract. Citations are derived from data included on standardized forms prepared by the authoring agency.

Companion index volumes to TAB and GRA are available to aid the user in determining which accessions in the collection are of interest. Each of these reference tools includes a Corporate Author - Monitoring Agency Index, a Subject Index, a Personal Author Index, and a Contract Number Index. The TAB index also includes a Title Index and a Release Authority Index. The indexes are cumulated quarterly and annually.

CRITERIA FOR INCLUSION: Defense facilities and their contractors are required to submit to the DDC copies of each document generated by the agency that formally records scientific and technical results of Defense-sponsored research and development. The DDC screens each document to ensure that it is of appropriate scientific and technical scope and to make certain it is not duplicated by a previous acquisition. Upon selection, each report is assigned an Accession Document (AD) number, processed into the collection, and recorded by microphotography.

SIZE: The DDC's technical report collection currently totals more that a million titles. Those accessioned since March, 1953 are under computer control.

TECHNICAL INFORMATION: Organizations registered for DDC services may request copies of technical reports in either full size or microform. Upon registering with the DDC an organization is sent a service package containing the necessary instructions and forms for requesting documents and other services.

The DDC provides a retrieval service to registered DDC user organizations. Users may submit search requests to the DDC via standardized search request forms; the center prepares a computer search strategy to retrieve citations to relevant documents. The resultant listing is sent to the user as a bound document entitled Report Bibliography.

TYPICAL USERS: Research and development activities within the Government and their associated contractors, subcontractors, and grantees, with current Government contracts, are eligible to receive most of the information derived from the DOD data banks located at the DDC. In addition, research and development organizations without current contracts may become eligible for service by a military service authorization under the Defense potential contractors programs. Organizations interested in obtaining DDC services can initiate such action by contacting the:

Defense Documentation Center
Attention: DDC-TSR
Cameron Station
Alexandria, Virginia   22314

INFOCEN

DESCRIPTION: INFOCEN is a management information system operated by the Aeronautical Systems Division of Air Systems Command. Mead Technology Laboratories developed the software. An IBM 370/155 presently supports it.

Use of INFOCEN is open to government agencies on a cost-sharing basis. Presently, the majority of users are from within the Air Force and Navy. User operating instructions are available, as are training sessions on system use. INFOCEN can be accessed through the AUTOVON line, through both WATTS and Tymshare, and through commerical and foreign exchange lines.

A variety of text processing features are provided by the Mead software. Full-text retrieval permits each word or phrase in a file to be treated as a keyword unless specifically excluded from this status. Individual files can be joined into what is called a "pseudo-file," allowing the option of individual or joint file processing. A "paging" feature permits the user to browse through records at various intervals. On color terminals, highlighting procedures can be used to accentuate different aspects of the display.

TRAINING-RELATED FILES: The following training-related files are maintained on INFOCEN:

(1) CANTRAC - The Catalog of Navy Training Courses

CANTRAC contains information on schools and formal training courses under the purview of the Chief of Naval Education and Training and Amphibious Forces, Atlantic and Pacific. It is a consolidation of the Navy Formal Schools Catalog, a series of 13 catalogs, each produced by separate Navy commands. Information provided with each course listed includes: purpose, scope, prerequisites, skill code, length, and other administrative information.

CANTRAC is maintained by the Education and Training Office in Pensacola, Florida. It is being used to store and retrieve up-to-date, standardized information on all Navy formal courses, and support the periodic printing of hard copy versions of CANTRAC for service-wide distribution.

(2) The Automated Data File on Instructional Technology

This file is being developed under the direction of T.E. Cotterman at Air Systems Division, AFHRL. The file contains a collection of abstracts of publications related to the technology of instructional systems development. Abstracts are comprehensively prepared so that for many needs they can be used in lieu of the original source. Approximately 1850 abstracts are presently on-line. Some 1100 more have been prepared for file entry. By February, 1976, the file should contain approximately 5500 abstracts.

Information provided with an abstract entry includes: a

categorization of the type of document cited, an abstract of the document contents, conclusions arrived at by the author, the abstractor's evaluation of the document, bibliographic data (information segments supplied here conform closely to those contained on DD Form 1473), and, where applicable, measurement techniques employed, research methods employed, population characteristics, independent and dependent variables, and a listing of media used.

The guidelines used for abstracting are described by S.P. Schumacher in the Development of a Technical Data File on the Design and Use of Instructional Systems, AFHRL Technical Report, December, 1973, AD-775 149. Presently, abstracts are being prepared by F. L. Scheffler and coworkers at Dayton University under contract by Air Systems Division (cited in Work Unit Summaries, Defense Documentation Center, Ac. No. DF 227580, July 1975).

(3)   Department of Defense Audio-Visual Information System

The Directorate of Audio-Visual Activities (DAVA) in the Office of Information for the Armed Forces is directing the implementation of a central inventory of military A-V resources. The files developed will be accessible to all defense activities that need to know what A-V resources are available, are in production, or are planned; they will also be accessible to those activities who must contribute to the data bank in order to keep it up-to-date. The centralized data bank developed will be used to provide integrated DOD catalogs and indexes, either in hardcopy or microform.

Present files at INFOCEN include files indexing motion pictures, A-V equipment, and A-V periodicals. Input is being accomplished at the military sites maintaining the information.

Standard reporting formats have been developed by DAVA. Few activities have maintained indexes containing the information requested by the DAVA format. Hence, implementation of the DAVA files will require considerable effort on the part of the reporting cites.